SCHOOL AND SOCIETY

FOUNDED BY J. McKEEN CATTELL IN 1915. WITH IT HAVE BEEN COMBINED THE EDUCATIONAL REVIEW, ESTABLISHED IN 1891, THE TEACHERS MAGAZINE, ESTABLISHED IN 1878, AND THE SCHOOL JOURNAL, ESTABLISHED IN 1874.

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HOME ECONOMICS EDUCATION IN THE UNITED STATES[1]

By BENJAMIN R. ANDREWS

PROFESSOR OF FAMILY ECONOMICS, TEACHERS COLLEGE, COLUMBIA UNIVERSITY

EDUCATION for home and family life is recognized as an important division of North American education both in public schools, in colleges and universities and in adult or extension education for out-of-school persons. The aim of home economics education has been stated as improving living conditions in the home, the institution household and the community. Its main divisions of subject-matter have from the first been food, clothing, the house and its furnishings and home management. The latter area has recently been broadened to include the direction of home and family life, child care and guidance, personal relations of family members, parent education, marriage and family life and consumer education.

How came home economics education to be widely accepted among us? When verbal education was enriched by activity education through the introduction of manual training sixty years ago, the household arts of cooking and sewing along with shop arts of wood and metal working were welcomed in our schools. As social-experience education, around 1900 under the John Dewey philosophy, came to stress the development of the child's personality by his living in social relations in the school and sharing there in group activities, the household arts and simple industrial arts were seen to be admirable tools of general elementary education.

The distinct vocational value of home economics education, recognized from the first by its own supporters, was declared to the nation by leaders in secondary education in 1918 when their adopted principles stated that schools must prepare for "worthy home membership"; and also by Congressional legislation in 1917 that provided subsidies for vocational education in agriculture, industry and home economics, and recently also in commercial or distributive occupations. This recognition that the home-maker's non-gainful but productive occupation is equal in economic importance to the gainful occupations of farm, factory and the market, thus became a fundamental principle of American education.

The home economics vocations, it should be noted, include not only that of home-maker, both rural and urban, but a wide variety of related occupations in institutional households, in government and social service and in business and industry for which special knowledge of food and diet,

[1] Presented in the Home Economics Program, World Federation of Education Associations, at the eighth World Education Congress, University of Puerto Rico, August 22, 1939.

clothing, shelter, home furnishings, care of children and problems of family life is necessary, and for which vocational and professional training has now been provided in higher institutions. This higher education in home economics has been made possible by the application of science and by organized research under government auspices, in the universities and in industrial laboratories. The government when it endowed the land-grant colleges of agriculture and mechanic arts in 1862 created institutions that shortly were offering home economics courses on the college level. These first college courses were based on the natural sciences in their relations to food, clothing, shelter; and later courses were developed based on the social sciences in relation to child care, family life and standards of living. From the state colleges such teaching spread into other higher institutions.

In the subsidized state agricultural experiment stations, research on food and nutrition, textiles and housing was soon inaugurated. This was stimulated from the central scientific staff in the Department of Agriculture where "Nutrition Investigations," formally organized in 1894, became later the Office of Home Economics and since 1923 the U. S. Bureau of Home Economics. This bureau with a staff of 76 scientists cooperates with the state experiment stations which are now authorized to do research on the economic and social aspects of the farm family.

In the universities, the departments of chemistry, physiological chemistry, physics, biology, sociology, economics, psychology and education have conducted research on varied aspects of food, clothing, shelter, child welfare, home and family life, so that the body of knowledge available for home economics education is steadily growing.

The underlying forces that have brought this new subject into schools and colleges are perhaps three: the modern scientific movement; the present industrial revolution and machine era; the modern woman or feminism movement.

As an index of science applied to the home, note that in 1898, Ellen H. Richards, the sanitary chemist, Wilbur O. Atwater, the food chemist, and others created the annual Lake Placid Conference on Home Economics, which 10 years later inaugurated the American Home Economics Association and its *Journal of Home Economics*, an organization now with 12,000 members representing the application of science to the problems of home and family. The machine era has taken work from the home and changed the character of housekeeping. The feminist movement has opened education and vocations to women and thus altered her world.

Home economics education is society's effort to provide individual guidance and community guidance, in this period of change in the home and all its interests caused by these impacts of science, of technology and of shifting status of women, upon society's most intimate and most cherished institution, the private family and its way of life. One other noteworthy fact is that boys and men as well as girls and women are increasingly participating in this type of education.

Following this introductory statement, this paper will present a symposium on home economics education by eight leading professors of home economics, each a specialist in the field for which she speaks. These statements are drawn from the American report to the 6th International Congress of Home Economics meeting at Copenhagen and made available for the World Education Conference, through the courtesy of the American Committee and the International Home Economics Office of Fribourg, under whose auspices the Copenhagen Conference was held.[2]

The Copenhagen report on home eco-

[2] The eight Copenhagen papers are now available in full in the *Journal of Home Economics*, 31, pp. 447–466, September, 1939.

nomics in pre-school education by Dr. Esther McGinnis, of the Buffalo, N. Y., State Teachers College, points out that the nursery school has become a feature of the home economics course in universities and teacher-training colleges so that students may observe and work with small children. Nursery schools established for child care as part of the relief program have increased to over 1,500 in number, and everywhere carry a function of training mothers and fathers in better methods of child care.

The Copenhagen report on home economics in American elementary schools, by Miss Ellen Miller, of the Merrill-Palmer School, Detroit, points out that all education has become more and more directed toward the solution of problems within the life experience of the child. Since life for the young child is so definitely home-centered, it is very natural that many of the school activities, especially those in the first few years, should be home activities. Accordingly we frequently find kindergarten, first, second and third grade children studying about their homes, how they are built, who builds them and how people live in homes both in this and other countries, as well as how families depend upon others for an exchange of goods and services to meet their needs. One finds quite generally that the children have built and furnished play houses, organized themselves into family groups, dramatized family and community life and perhaps actually prepared and eaten a meal or carried on other domestic activities. Frequently it is in the grade or "home" room, in practical arts or social science classes that one finds such activities. However, they may be designed not for the purpose of helping children to be better family members but simply as a device within the child's experience through which to teach certain manual and motor skills, comprehension of reading and number or skill in being a cooperative member of a social group. Any direct education for home living may be purely accidental since the teacher may either be untrained or unaware of family living as an educational objective. More and more, however, educators are becoming aware of the need and the opportunity. Probably the best method is in those schools where the home economics teacher assists in the planning of group activities and then comes into the room or takes the class at definite intervals for those portions of the work for which she is by training and experience especially qualified. A second-grade class with the cooperation of the home economics teacher and the seventh grade teacher planned to build and equip a grocery store. The second grade children collected and labeled food, cans and boxes and set up the store and stocked it with many kinds of foods. These children learned something of the foods required for health and learned roughly to classify and select them. The seventh grade children planned market lists to meet the needs of specific families both from the point of view of nutritive requirements and money to be spent, and purchased it from the second grade store.

In the upper elementary grades, especially in the sixth, seventh and eighth, separate home economics classes are frequently offered for girls and sometimes for boys. Three general types are offered: (1) Classes to develop specific skills and techniques for the purpose of stimulating interest in home activities, and also for the general educational purpose of exploring many areas of life and trying out a wide variety of creative activities. (2) The solving of personal or family problems or the study of some particular aspect of family life as housing or child care. (3) A third type of program is a survey of home activities for the purpose of developing understanding and appreciation of the various functions of the family. Such a course may be offered either as an introduction to more intensive training or to groups not likely to have fur-

ther training. In any case, it is very practical and aims to help girls meet and solve the problems in their own everyday living.

The trend in the elementary schools in the United States is very strongly in the direction of providing, as an important aspect of the curriculum, experiences designed to improve understanding of family life, to increase underlying knowledge and to acquire the fundamental skills necessary in maintaining the home. These are seen as social as well as technical skills.

The report on home economics in American secondary schools by Professor Dora S. Lewis, of New York University, points out that there has been a more general acceptance of responsibility for educating both boys and girls for effective participation in family living, for intelligence about marriage and for understanding the social significance of the family. A few secondary schools are experimenting with a unified course for all students, based on their general needs and drawing on many fields of subject-matter including home economics. An increasing number of schools offer elective home economics courses planned exclusively for boys, and others are experimenting with courses in which boys and girls study home living together.

Many secondary schools allow all girls to take from one to three years of home economics beyond the required courses. A few schools are offering girls opportunity to develop homemaking skills to the point of using them for wage earning.

In keeping with the emphasis on improvement of living through meeting the immediate needs of learners, home economics has been moving in the direction of: (1) centering class experiences around actual personal, home and community problems of pupils; (2) giving pupils maximum responsibility for planning and carrying forward class projects; (3) building more definitely on previous learning in school, home and community; (4) obtaining the cooperation of parents in giving pupils opportunities for managerial experiences in their homes under the guidance of the teacher; (5) working with teachers of other subjects to effect desirable correlation; (6) developing pupil-teacher partnership in evaluating progress toward goals they have selected together in terms of desired life values.

Other noteworthy trends include: (1) increase in the number of schools providing experiences with young children as a means of teaching child care and guidance; (2) emphasis on developing consumer judgment through more attention to relative values before making decisions about the use of money; (3) more conscious planning for growth in understanding of self and others as a means to greater enjoyment of living and working with family members and friends; (4) more awareness on the part of teachers that home economics has a vital contribution to make in the general education of all boys and girls.

Careful attention is being given to planning the sequence of experiences in learning: (1) to enjoy taking part in making homes more attractive and livable (through application of art principles, consumer knowledge and homemaking skills); (2) to select food wisely at meals or at the market and to develop ability to plan, prepare and serve attractive and adequate meals for varying income levels; (3) to select clothing suitable to the individual, the occasion, the income; to be able to judge the value of garments and materials; and to develop skill in the alteration or construction and care of garments; (4) to study child development as a means to self-understanding as well as for intelligence and understanding in caring for young children; (5) to find new opportunities to improve social and family relations.

In all phases of home economics, attention is given to social, economic, practical and esthetic aspects and to teaching them so that the pupil understands how they

function in personal development, and has the ability to use them in her own living.

The report on home economics in colleges and universities by Dean Grace Godfrey, of Drexel Institute, Philadelphia, states that home economics enrolment in the colleges has rapidly increased during recent years, being 20,711 in 1938. Elective courses are available to college students not specializing in home economics including: preparation for marriage, family finance, child care, housing, interior decoration and nutrition. Professional training of the home economist still remains the chief function of home economics in the colleges and universities, including special training for: (1) teachers in secondary schools and colleges; (2) leaders of adult education classes; (3) directors of nursery schools; (4) dietitians in hospitals, school lunch rooms, dormitories and commercial food service units; (5) workers in the commercial field, where the home economist deals with consumer problems of production and merchandising of food, clothing, textiles and equipment; (6) nutrition workers in hospitals and social service organizations; (7) fashion advisers; (8) home extension agents, through whom home economics education is brought to the adults and to the children of a community in organized club work; (9) research workers in foods, textiles and equipment laboratories; (10) journalists serving newspapers, magazines and the radio; and (11) costume designers and workers in the related art fields.

Special curricula have been developed which permit the student to explore the subject-matter most pertinent to the type of specialization desired and actual experience in some phase of specialized work is secured for each student during the undergraduate years. Graduate students are to be found in the larger home economics colleges. The master's degree is conferred upon persons who successfully complete one year of prescribed work after receiving the bachelor's degree. The doctor's degree is conferred upon persons who have completed at least three years of post-graduate work in some specialized field and have demonstrated ability to do independent research and to achieve scholarly results.

The report on training for home economics teachers by Professor Florence Fallgatter, of Iowa State College, states that a sound four-year educational program for training teachers of home economics is increasingly recognized as one which provides for the development of the student as an individual, as a homemaker, as a teacher of home economics and as a member of society capable of dealing with rapidly changing conditions. An investigation of teacher-training institutions in 1935 showed that the average curriculum devoted about 30 per cent. of its courses to home economics; 17 per cent. to natural sciences; 7 per cent. to social sciences; 4 per cent. to art; 13 per cent. to education courses; 13 per cent. to general cultural courses, and 12 per cent. to elective courses. The courses in home economics provide for study in child development, family and community relations, housing, home management, consumer education, textiles and clothing, foods and nutrition and home nursing. The natural sciences include physiology, physics, chemistry, biology and bacteriology. The social sciences include sociology, economics, history, political science; the courses in education include also psychology, principles of teaching, measurement, observation and methods of teaching together with supervised experience in teaching home economics.

The Copenhagen report on home economics extension work in the United States, prepared by the Extension Service, U. S. Department of Agriculture, describes it as a nation-wide system of adult education for farm men and women and for rural boys and girls through 4-H Clubs, with national headquarters in the Department of Agri-

culture and functioning through all the publicly supported agricultural colleges in the states and territories. It is supported jointly by federal, state and local funds. More than 8,500 extension workers are employed, serving over 4,000,000 farm families, more than half of the farm people of the nation.

The homemaking part of the extension program is concerned with helping farm families attain in their own homes and communities a greater measure of health, convenience, comfort, beauty and satisfying relationships. Teaching is done, for the most part, by the county home demonstration agents, women trained in home economics. They work with the rural families in small communities, visit their homes, know their needs. The entire staff of home demonstration workers, federal, state and county, now numbers more than 2,500, representing a 50 per cent. increase since 1934.

More than 2,000,000 rural women and girls are now taking part in this educational enterprise. Their participation is entirely voluntary. They meet regularly in organized groups in local communities (usually once a month), to study better ways of homemaking. Each group member has a voice in deciding on the program. Programs differ, depending on local needs and problems, but all have this common objective—better homes with a more satisfying family and community life. Teaching is informal. Group members take active part in discussions and demonstrate improved practices in their homes. Home demonstration club members assist with such community activities as the school lunch, library facilities and children's clinics.

During the past twenty-five years the extension service has helped farm families with problems on food, clothing and home improvement. Newer trends include special emphasis on: electricity, economics, family money management, consumer education, housing and parent education for better family living.

One of the most important results of home demonstration work is the development of capable leadership among rural women. They learn to be efficient officers of their organized groups. They receive instruction in subject-matter and present it to their local home demonstration club. They help plan activities such as exhibits, educational tours, farm women's camps, achievement days, and they stimulate interest in statewide, national and international affairs of concern to rural homemakers. More than 200,000 women serve as volunteer leaders.

The report on training for dietitians and institution managers by Professor Mary deGarmo Bryan, of Teachers College, Columbia University, states that approximately 165 colleges and universities now offer courses leading toward a bachelor's degree with a major in foods and nutrition or in institution management, and hundreds of graduates proceed yearly to training as student dietitians in hospitals, 55 of which have been approved as training centers by the professional association of dietitians—the American Dietetic Association. Other opportunities for women trained as dietitians and as institution managers include management of school cafeterias, school and college residences and other types of institutions, commercial food, hotel and housing enterprises.

The demand for women trained as dietitians and as institution managers exceeds the supply. The abilities and fine professional attitude of the young women now entering the field and the general recognition of the contributions which they may make to the institutions promise well for the future.

The report on home economics in adult education programs by Mildred Weigley Wood, supervisor of home economics education, Phoenix, Arizona, points out that home economics in adult education has

made much progress in meeting the needs of education for family living due, largely, to study and research centered around family living in this country. Out of this study has come a much more clearly defined philosophy regarding the purposes of adult homemaking education, the desirable scope, the relation of specific fields of homemaking to family living and the groups to whom it should be available. We have also arrived at a better understanding of methods of developing a program based on the emerging philosophy. As a result adult homemaking education is helping homemakers to interpret their experience in family living in terms of world progress.

QUANTITATIVE RESEARCH ON TEACHING AND LEARNING

By WILLIAM A. BROWNELL

PROFESSOR OF EDUCATIONAL PSYCHOLOGY, DUKE UNIVERSITY

FROM the standpoint of classroom instruction perhaps the two unique features of twentieth-century education in the United States are the adaptation of the curriculum to the child and the application of quantitative research techniques to the study of teaching and learning. Both of these features, as we now know them, are complexes with many aspects, and both are the results of movements which had their origins as early as the 'nineties.

It is with the second of these two features of present-day instruction that this paper is concerned, namely, with the so-called scientific movement as this relates to the improvement of teaching. This movement has by some been given the name "experimental education." Objection has been raised to this term as being inexact: all phases of education (administrative as well as pedagogical) are "experimental" in a real sense. Nevertheless, the term "experimental education" has the advantage of brevity and of convenience, at the same time that it avoids over-ambitious pretensions; and so this term will be used in this paper in place of phrases which, even though more exact, are at the same time more cumbersome and more susceptible to errors of interpretation.

Perhaps it would be well to start with an illustration of experimental education in the sense in which the term is to be used. One of the writer's graduate students is trying to discover something about the ability of children in the intermediate and grammar grades to understand and to apply geographic principles. He had at first to analyze instructional materials in order to ascertain the geographic principles to which these pupils are exposed. He had, next, to devise an instrument to measure the ability in question. This he has done by supplying his experimental subjects with copies of a map of a hypothetical country, about which he asks questions concerning the selected geographic principles. Having measures of the ability, he is then ready to examine the factors relating, on the one hand, to its growth from grade to grade and, on the other hand, to variations in its growth effected by different instructional programs. Thus far he has collected data both from group tests and from individual interviews to show that children in these grades actually are able under appropriate instruction to form generalizations and to make applications which some of us had believed to be beyond their powers. Furthermore, this student is gathering information which will help us eventually to define just what constitutes "appropriate instruction."

So much for an illustration of experimental education. Let us now return to the movement as such, and begin by noting its

background and rise. After this we shall consider its actual contributions and its principal weaknesses.

BACKGROUND AND RISE

One way to portray the history of the movement is by means of a curve. Let us place years along the base line, beginning, say, with 1890 at the left. On the vertical axis let the scale stand for the number of quantitative studies reported, with 0 at the bottom. Now we can locate our data by three-year periods and draw a curve. If we do so, our curve will be found to hug the base line pretty closely until about 1909, when it turns upward noticeably until 1915. There the curve flattens at the level attained until 1921, probably one of the many effects of the World War. With 1921 the curve swings abruptly upward at a rate which could not possibly have been predicted from its course prior to that time. This tremendous rate of increase was maintained until 1930 when it began to lessen somewhat. For each of the next two three-year periods, the total number of studies exceeded that of the period 1927–1929, but the curve had begun to level off. However, there seems to be no reason to anticipate a decline in the rate of output of new quantitative studies for the next decade at least.

Definiteness and concreteness can be given this description of the curve if a few figures are cited. Those used for this purpose were obtained from bibliographies in the two subjects arithmetic and reading, but they are probably typical of figures for other subjects as well.

Prior to 1900 but twenty-seven quantitative studies had been reported in the two fields together. By 1909 the total had grown only to eighty-nine; by 1921, to 457; by 1930, to 1,444. In this nine-year period from 1921 to 1929, inclusive, the period of remarkable increase, 987 studies were reported, a number which is more than twice that for all the years preceding 1921. Data for the years since 1930 are not exactly comparable with those for earlier years, since the basic bibliographies have been differently assembled. Nevertheless, it is safe to estimate that the total number of quantitative studies in these two fields is about 3,500, with an annual increase of well over 250, exclusive of unpublished matter such as master's theses.[1]

This brief review of figures emphasizes in an impressive manner two facts about experimental education: one is the extent of the movement; the other is the recency of its development. We may say that the movement was really born about 1910 and that at its present age it is barely thirty years old. If, in deference to its newness, we call the movement an infant, then we must add that the infant is a most precocious one.

There is a second way in which to trace the history of experimental education: that is, in terms of the problems investigated and the techniques employed from period to period. For concrete illustration here, we may again cite the fields of arithmetic and reading.

Seventeen quantitative investigations were reported in arithmetic before 1900. In fifteen of these studies adults, not children, served as subjects. The points of experimental interest were: counting by adults, adult number forms, number imagery, number personification, effect of fatigue and sex differences in computation. The techniques were those of the laboratory, of the questionnaire and of introspection. The investigators—Calkins, Galton, Gilbert, Hall, Hornbrook, Warren and Whiting, for example—were psychologists, and as such were nat-

[1] Adopting the definition of a research study used by the U. S. Office of Education, Monroe estimated (1937) that there are available somewhere and in some form the reports of some 50,000 research studies bearing upon *all* phases (not merely the pedagogical phases) of education. He further estimated the annual increment as between 4,000 and 5,000 studies a year. Walter S. Monroe, SCHOOL AND SOCIETY, 45: 633–9, May 8, 1937, p. 637.

urally little concerned with the educational significance of what they found.

The early work in reading may be characterized in a similar way. Of the first twenty reports, which bring us up to 1906, six can be disregarded as containing no new quantitative data. Of the remaining fourteen, nine were made with adults only, four with children only and one with both adults and children. The adult studies were made in the laboratory in order to observe eye-movements, to measure the perceptual span and to test the hygienic properties of various type faces. Most of the studies with children deal with reading interests, and so reflect the popular Child Study Movement of the day. As to the investigators—Burnham, Dodge, Griffing, Huey, Judd and Quantz—again we are surrounded by psychologists.

Such were the beginnings of experimental education, and such the studies which continued to appear for years. In its early stages experimental education was but an extension of experimental psychology.[2] Psychologists used skills and abilities produced in the school only because those school skills and abilities for some reason were especially well adapted to their particular purposes. Those purposes being in no way related to the problems of systematic education, the results could hardly contribute to an improved pedagogy. And they did not.

Along about 1910 a new kind of study began to appear, and a new kind of investigator entered the field. He was the so-called measurements expert, and his aim was to evaluate more reliably and more validly the results of school instruction. Studies by educationalists had already revealed the great number of laggards in the school population and had raised uncomfortable questions concerning their cost, both in money and in human happiness. At the same time other studies, also by educationalists, had demonstrated the untrustworthiness of teachers' marks. Meanwhile, the psychologist had been adapting statistics to his uses and devising means of quantifying mental phenomena. In these circumstances it was almost inevitable that some one should want to apply the psychologist's techniques to problems relating to school instruction. Thus arose the measurement movement in education.

Great impetus was soon given the work of the measurements expert by the successful use of objective intelligence tests with the army in the World War. Standard tests in the school subjects were published in ever-increasing numbers, and these tests found immediate use in the school survey in vogue at the time. The years 1915 to 1928 were of utmost significance in the history of experimental education. Early contributors to the measurement movement—Ballou, Buckingham, Courtis, Stone, Trabue, Wilson, Woody and others, to mention but a few—had training in psychology, or in statistics, or in both; but, what is fully as important, they all had rich backgrounds of experience in the public schools. With them began the transition to an experimental education dominated by educationalists instead of by psychologists and statisticians and dedicated to the improvement of school instruction. With them they brought their tests and their techniques which, once they had been refined and supplemented, made possible the more certain study of problems of learning and teaching. Trends established at this time have continued since, and we are justified now in 1939 in believing that experimental education has

[2] This statement is not intended to minimize the practical pioneering work of J. M. Rice, who is generally credited with being the first to stress the application of scientific techniques to educational problems. The point made here is that there were *numerous* psychologists busy at this time with techniques later of usefulness in the field of education, while there was only one J. M. Rice, or, at most, only a few educationalists, engaged in this type of activity.

"arrived" and is ready to perform increasingly valuable services.[3]

CONTRIBUTIONS OF THE MOVEMENT

So much for the background and rise of experimental education; now, what has the movement accomplished? Has all this feverish activity produced tangible results of any importance?

It would be pleasant to be able to answer these questions neatly and emphatically in the affirmative—to say that the effects of experimental education upon instruction have been many, and all of them good. But no such answer can honestly be given, for a great deal of the research work has been futile, and some of it has been downright harmful.

It is logical, of course, to look for the effects of experimental education in changes in current school instruction, but practice lags behind research a full decade or more, and nowhere is this truer than in the field of education. Accordingly, evidence as to the contributions of experimental education must be sought, not in what might be called typical school practice, but in the *best* school practice; not in what the average teacher does, but in what the best teacher *can* do if he will make full use of the results of research. Five types of evidence of this kind will be presented.

(1) The first of these types of evidence may be illustrated by citing changes in the teaching of reading. Children by the time they are in grade II now can read as fluently as did the writer and his schoolmates (if memory is to be trusted) when they were in grade V. Moreover, children now read a greater variety of material, and they *want* to read. These changes must be attributed to better instruction and to better reading materials. Children's interests have been ascertained; more attractive stories and books have been written; the reading vocabulary is better selected and better graded, and it is better developed, better controlled and better taught. Perhaps the brightest children learn to read no faster to-day than formerly, but we now can teach the average child and the slower child to read in a happier, more economical manner. Instructional techniques have been discovered which enable us to teach to read almost every child who has any business at all in school.

For obvious reasons, the instructional gains which have followed quantitative research in the other school subjects can not be described at length, but there *have* been gains. In arithmetic, for example, a greatly improved pedagogy is in the making. We know far better than ever before what the difficulties of this subject are, and we are finding ways to circumvent them. For the old hammer-and-tongs drill methods, which at best gave us imperfect control of mechanical computation and left us distrustful of our own (and of our neighbors') ability to keep score accurately in bridge and in golf—for these methods we are substituting others which in the end should create a new kind of quantitative intelligence.

The gains in most of the other subjects—in the social studies, for example, and in most of the secondary school subjects—have not been as great as in reading and arithmetic. Nevertheless, even here important exploratory excursions are being made to locate the places most amenable to attack. We are beginning to know at least *why* we

[3] In this account no reference at all has been made to experimental education, called by whatever name, in other countries. If from this fact the reader draws the inference that experimental education is peculiar to America, he will not be far from correct. In spite of the direct and indirect influence of the historic Wundt laboratory on American psychologists (Cattell and Judd, especially, and, through the former, Thorndike), and in spite of excellent early work by Lay and by Stern, for example, the movement never attained wide popularity in Germany. The situation is similar in England. Ballard, Burt, McLelland, Winch and others had made noteworthy studies before 1910, but their lead has not been at all generally followed.

fail to do a better job of our teaching—and that is so much clear profit.

(2) The one evidence of the value of experimental education just discussed relates to contributions to instructional techniques and materials. A second kind of evidence is found in improved diagnosis. No invidious comparison being intended, it may be said that experts in reading, arithmetic and spelling can now make diagnoses no less valid and reliable than are most diagnoses in medicine. New diagnostic techniques are being steadily devised, and a reasonably large number of them work. Admittedly, remedial procedures have not kept pace with diagnostic techniques, but they are catching up. The next step will be the development of preventive teaching, analogous with preventive medicine.

A concrete instance of promising research in the field of preventive teaching is that on "readiness." In this research an attempt is made to determine just what skills, concepts and abilities are needed for successful achievement in a given segment of subject-matter. While, as yet, some of this "readiness" research is open to question on psychological grounds and while most of it has dealt with learning in the primary grades, there is no reason to doubt that both of these deficiencies will be corrected. The notion of "readiness" certainly need not be restricted to learning in its initial stages, nor need "readiness" be regarded in magical terms, as the inevitable and predictable result of some mysterious process of inner growth which is essentially spontaneous and uncontrollable. On the contrary, further research will demonstrate that "readiness" is the product of experience and will reveal what experiences need to be provided and how they should be arranged and managed at all levels of learning.

(3) A third kind of evidence lies in the improvement of measurement. The reference here is not to the early (and unfortunately persistent) hullabaloo about the development of the true-false, the multiple-choice and other new-type test forms. Some of this first excited work illustrates well the kind of experimental education which, some paragraphs back, was characterized as downright harmful. Now that the noise and hysteria are subsiding somewhat, real advances are being made, notably in measuring the so-called "intangibles" of education, in some cases by "objective" means, in others by the collection and classification of observations of relevant changes in behavior in critical situations. For example, we have very respectable beginnings of measurement of the ability to draw inferences, to test scientific hypotheses, to apply principles, to recognize the cogency of arguments and the like. These beginnings justify hope, not merely because they assure more precise evaluation of achievement, but also because they should lead directly to improved instruction. When we can measure the "intangibles" of education more accurately and more certainly, we shall have better definitions of them. With improved definitions of these outcomes we shall know better how to help learners to attain them.

(4) A fourth kind of evidence is found in the conduct of teachers who have been brought into direct touch with the best work in experimental education. Such teachers are not numerous, for relatively few of them have these contacts. In their undergraduate professional training, not all college students learn even about the existence of the experimental movement, to say nothing about its nature, its purposes and its actual contributions. As a matter of fact, this knowledge is not always possessed by graduate students in education. While it is probably both futile and undesirable to try to make all teachers producers of research, still all of them should be made consumers of research. Until they become so, research findings must wait needlessly long for translation into school practice.

Teachers equipped with interest in re-

search and with ability to consume it wisely are changed teachers. Teaching is no longer the administering of doses of subject-matter to ignorantly eager or to indifferent and even hostile minds; it is an art of compelling attractiveness. These teachers see in each difficulty a challenge, and they approach that difficulty experimentally and confidently. There is a way to meet it, and they will not be satisfied save by its solution.

(5) The fifth kind of evidence is found in the variety of experimental procedures which have been evolved. Perhaps these procedures should be regarded less as evidence of gains than as a promise of future usefulness. However that may be, we have procedures by which to study learning in groups and in individual children. We have laboratory and observational techniques, the interview and the conference, the case method and the control-group experiment. We have means of testing the work of special systems of teaching and of evaluating the merits of rival systems. We can study learning directly, or indirectly by analyzing materials of instruction, organized programs of instruction and products of learning. None of these procedures is easy to control, but we are learning how. Even studies in which techniques are ill-chosen or are badly managed teach us something when they show us what not to do the next time.

Five types of evidence have been advanced to show the principal values which have accrued from experimental education. These are: (1) improvements in the methods and materials of instruction in the various school subjects; (2) more competent diagnosis; (3) the derivation of new techniques to measure educational outcomes which have too long escaped careful evaluation; (4) a new vitalized view of the nature of teaching; and (5) the invention of new research procedures by which to study more penetratingly the processes of teaching and of learning. To persons who, like the writer, are not wholly unbiased, experimental education seems to have produced amazing results in the thirty years of its existence.

WEAKNESSES OF EXPERIMENTAL EDUCATION

Yet no one—certainly no active producer of research—is complacent about this record of success. Unquestionably all view what has been accomplished merely as a good beginning. There is much yet to be done.

(1) First, we must find some way to overcome the fragmentary character of research. In the account of the history of experimental education in the first pages of this paper only part of the story was told. With some pride the rapid rise of the movement was traced, and its present size was described; but not all aspects of the movement are so gratifying. Approximately half of the 3,500 and more quantitative reports in the fields of reading and arithmetic are the work of writers who have published one study, and that is all. Stated differently, three fourths of those who have reported any studies in these two fields have reported but one study. Persons who have published as many as four studies rank among the most productive 10 per cent.[4] There is no reason to believe that the situation differs materially in spelling, language or the other subjects.

The truth is that experimental education is a *popular* field, not a *demanding* field. The reason why the curve rose so precipitously about 1920 and why it has since maintained its high level is because each year an army of new workers is enlisted, but among them are few recruits who stay long with their problems. The typical research worker attacks some detached problem, finishes his study quickly, suggests vaguely his intention of checking his tentative conclusions at some later but carefully

[4] William A. Brownell, *Jour. of Ed. Research*, 26: 429–41, 1933.

unindicated time, drops the problem and moves on to another which transitorily engages his attention. This condition is most unhealthful. Experimental education must be manned by workers who are not satisfied with sporadic efforts and with half-answers, but who are moved by consuming curiosity, by a persistent and gnawing urge.

(2) Second, we experimental educationalists must become considerably more humble. Many of us are still over-confident of our techniques and of what they will do for us. For our purposes we isolate or abstract some feature of a complex situation, disregard related features, take our measurements and make our interpretations. That the validity of these interpretations is contingent upon neglected but significant elements not uncommonly escapes our notice. We have unbounded faith in our techniques to correct whatever errors of omission and commission we may be guilty of.

Nowhere is this blind trust in techniques more in evidence than in our use, or misuse, of statistics. Between 45 per cent. and 75 per cent. of the space in research reports is not infrequently devoted to the statistical aspects of the investigation. In fact as one reads the earlier parts of a research report, one is apt to detect an air of uncertainty and uneasiness which disappear immediately when the writer can plunge joyously and trustfully into the statistical treatment. Here at least he can proceed surely. He can compute his measures of central tendency, and of dispersion, and of correlation in the assurance that his readers *must* accept this material. And, frankly, most of his readers will, for they will not go behind his data. Like the investigator, they too have come to regard statistical treatment as a sort of baptismal rite. No matter how sinful the measures when they approach the statistical font, they leave it pure, undefiled, innocent. Yet, as is well known, statistics is quite powerless to correct errors and invalidity in the data to which the statistics is applied.

Our child-like reliance upon statistics to do things it can not do is but one illustration of our tendency as experimental educationalists to put too much faith in our techniques. Other illustrations could easily be found—the control-group procedure, for example, whose popularity is general but whose rigorous requirements are seldom indeed satisfied in application. Further illustrations, however, are not needed, since the purpose here is only to make the point that we must become less self-assured. We must be as ready to admit the limitations of our procedures as we are to assert their advantages. This is, then, the second way in which experimental education must be changed if it is to make progress.

(3) Progress will be made, third, when we experimental educationalists have cured ourselves of the itch to be called "scientific" and when we have desisted from argument for recognition as "scientists." Outlay of energy in such claims and in such dispute seems, to the writer at least, to be pretty silly. Even if we should come to be accepted as "scientific," we should have gained little by the victory. The quality of our labors can hardly be guaranteed by this label, for, if there is quality, it is intrinsic in the worth of the labors themselves.

But there is a deeper reason than mere futility for abandoning the struggle for recognition as "scientists." Let us again look to our antecedents. Experimental education is the direct descendant of the experimental psychology of four and more decades ago, which in turn was sired by the experimental physics of the latter half of the nineteenth century. Thus, experimental education has a direct line back to the science of the physics laboratory of 1875. If, to be "scientific," experimental education must be restricted to the techniques of the laboratory and to the ideology of the nineteenth century physicist, then it is in danger of being more harmed than helped by its ancestry.

We experimental educationalists, as has

been previously suggested, do not now by any means limit ourselves to the techniques of the laboratory, but neither have we yet entirely shaken off from our thinking the shackles imposed by our historical connection with last-century laboratory physics. Our too great deference for our forebears is clearly evident in over-concern for a certain kind of objectivity in our data. When we will accept only data which are objective in the narrow laboratory sense of the word, we in effect reject the crucial part of the behavior involved in any instance of learning. Reactions of vital significance are passed over because they can not be measured thus objectively. On the other hand, reactions which are trivial and may not be at all related to the learning—such data are scrupulously reported and even made to bear the burden of proof, because *they* can be thus objectively measured. Subservience to a laboratory conception of "objectivity" thus robs us of vitally important data and substitutes meaningless measures. It does more than this: it unduly restricts the problems which we may attack experimentally, no matter how important those problems may be for effective instruction.

We shall do well to forsake our worship of an outmoded notion of science. We educationalists have our problems to solve, and we must get at their solution by whatever means—"scientific" or not—are best adapted to our ends. We can well afford to leave to our critics the names which they will apply to our products. They probably will continue, as now, to enjoy this privilege anyhow.

(4) Fourth, we experimental educationalists must turn attention to areas which up to now have been more or less deliberately avoided. Our knowledge of learning is more nearly complete for the lower grades than for the higher grades of the elementary school, and for the elementary school as a whole than for the secondary school and the college. It is not strange that this is so. Learning is more manifest in its beginnings than at its later stages; changes are more readily noted and recorded. Whether children have memorized facts, whether they can define terms, whether they can write and figure and spell—these types of learning are easily susceptible to experimentation. But we also need to know how children come to understand spatial relationships in geography and geometry, causal relationships in science, time relationships in history, and so on. While these types of learning are relatively hard to index, we can not continue to slight them. The success of research at lower educational levels and with simpler kinds of mental processes certainly justifies the expectation that serious work at higher levels and with more complicated and abstract processes will not be without success.

(5) The fifth possible way to improve the effectiveness of research calls for a change in emphasis or, perhaps better, for a change in point of experimental attack. We need to become relatively more interested in learning as contrasted with teaching than we have been up to now. For every experiment in which careful data on learning have been collected there are probably three to five experiments on teaching. Learning and teaching are of course closely related; nevertheless, it is possible to investigate teaching without finding out much about learning. Not only is this possible, but it is just about the usual thing. Experimenters try to determine whether Method A is better than Method B, or Text-book L better than Text-book M, or whether Activity X should precede or follow Activity Y. The decision for A or B, L or M, X or Y obviously requires some knowledge of the effects on learning, but the effects which are recorded are usually crude rather than refined, gross rather than specific and superficial rather than searching. On the basis of such information we *may* be able to say that A is

better than B in the given circumstances; but *why*, we do not know. And it is not impossible that though A is better than B, A is actually very far from good—that, as compared with best possible practice, A is very bad indeed. In a word, the learning measures which we secure move us hardly at all in the direction of large improvement.

As others have pointed out, much of our research carries the assumption, implicit though it be, that there is after all one method (or order or text-book arrangement, or what not) which, for inherent and ultimate reasons, is better than any other. We seem to be seeking the absolute and to believe that if we can but remove the masking impedimenta we shall be able to discover this absolute. Now, there is slight justification for this assumption and for this belief; rather, every phenomenon is conditioned in one way or another. If this is so, then, the task of research is to ascertain the factors which affect learning and which in turn affect the relative efficiency of the educational practices in question. Once we shall have found out more about these factors in learning and about the way in which they operate, we shall be in a position vastly to improve pedagogy.

(6) Last of all we come to the most needed change which we experimental educationalists must undergo if we are to make our potential contribution. As a matter of fact, the five criticisms already made may actually be but symptoms of the need for a single more fundamental chance: somehow we must come to view our efforts and our products against a far larger background than now fills our eyes.

A good illustration of our lack of vision is the work which has been done on the effect of class size on college instruction. Several investigators of this problem agree that students do as well in large classes as in small ones. But, what do we mean by "do as well?" For an answer we must go to the experiments. The measures of comparative achievement have customarily been derived from new-type tests. Such test scores are more "objective," and therefore more "scientific." Also, but not so frequently mentioned, these test scores are apt to reveal only the ability to reproduce what has been memorized from class and from text. They call for no reorganization of knowledge; they do not even call for a coherent self-initiated *expression* of knowledge. Furthermore, we find that the experimenters have lectured alike to the large class of 200 or 300 and to the small class of 25 or 40. With these facts before us we can reframe the conclusion of the experiments: Provided that one lecture and that one measure learning purely by factual tests of the so-called objective variety, one can secure as good results with large classes as with classes one sixth their size.

Stated in this way, the experimental conclusion stands out in its true bleakness. The experimental factor is seen to have been not size of class at all, perhaps, but the acoustic properties of the room or the hour of the lecture or the carrying quality of the lecturer's voice. Stated as the conclusion is usually stated, however, the really important educational questions are concealed. How much justification is there in lecturing, and only lecturing, day after day to a class of twenty-five students? Ought there not be some adaptation of educational method, different for small and for large classes? Can we be sure that we have produced real learning when our only evidence is that our students can give back what we have told them? Is it not one of the important outcomes of any course of instruction to be able to think and to express one's self clearly and effectively in the language of that subject? Can we certainly attain this outcome unless we give opportunity for expression, even require it? These are the questions which must be answered before we shall know the effects of class size upon instruction.

But these crucial questions are left unanswered—yes, even unasked. The reason is that we see our problems too narrowly.

However the fault be described, it is a real fault, and it must somehow be corrected. But how? It is far easier to point out the weakness than it is to remedy it.

The quality of judgment, of unbiased appraisal, is commoner among the mature than among the immature, but maturity alone does not guarantee sound judgment. Neither do courses in the philosophy of education or in experimental education. The only line of action which seems at all promising to the writer is not one which will make for sudden improvement; it is that of long-continued application, year after year, in rather restricted areas of research, supplemented by much reading and thought in the areas which surround and give significance to the research area. If we must put up with the growth pains of the newcomer in educational research as he slowly attains proportion and perspective in his thinking, that may be the price we shall have to pay for better research.

CONCLUDING STATEMENT

In this paper, experimental education has been briefly examined from three points of view. First an account was given of its background and rise. Next were listed five of its major contributions to pedagogy. And finally, six of the principal weaknesses in experimental education were held up for comment. With this summary the paper might be concluded, save that it would then end on the wrong note. There is no ground for pessimism with respect to the future of experimental education. If the record of accomplishment of the past thirty years means anything, it warrants the prediction of continued success. Nor is this prediction only a pious hope, the product of wishful thinking. Improvement will come because it already is coming. The research of the past ten years is markedly superior to that of the preceding ten years, and the research of the next decade should reveal progress no less substantial and heartening.

EDUCATIONAL EVENTS

1940 AS A CENTENNIAL YEAR IN THE HISTORY OF EDUCATION

IN continuation of previously published lists[1] of centennial dates in the history of education, the following group of significant 1940 dates is presented. Additional details regarding many of these events and persons may be found in encyclopedias and in histories of education.

340 A.D.

Birth of St. Jerome of Dalmatia, who prepared the text of the Latin *Vulgate*, and exercised a marked influence on the education of girls.

Birth of St. Ambrose, author of "De Officiis Ministrorum," a manual on morality which encouraged the study of ancient literature and was influential throughout the Middle Ages.

[1] See SCHOOL AND SOCIETY, January 7, 1939, for list of centennial dates for 1939 and for references to similar lists from 1926 to 1938.

EDITORIAL NOTE: SCHOOL AND SOCIETY is grateful to Dr. Walter C. Eells, secretary of the American Association of Junior Colleges, for his kindness in consenting to continue his annual listings of centennials of important happenings in the history of education.

540

Birth of Pope Gregory the Great, founder of the Scola Cantorum at Rome, as a result of which the Song School came to be maintained at the medieval cathedral as regularly as the Grammar School.

640

Death of St. Gall, Irish hermit, the site of whose cell in Switzerland became a shrine for pilgrims, and a century later a Benedictine monastery, which for three centuries was one of the chief seats of learning and education in Europe.

1340

Birth of Gerard Groote, founder of the important Catholic teaching order of the Brethren of the Common Life, a leading factor in the spread of humanistic studies in the Netherlands and Germany.

1440

Founding of Eton Public School, next to the oldest and one of the best known of the great English public schools.

Death of Nicholas de Clemanges, who popularized the works of Cicero and Aristotle in the schools of Paris.

Commonly accepted date for invention of printing from movable type by Gutenberg.

1540

Publication of the "Manual de Adultos" from the first printing press set up in the New World, at Mexico City.

Birth of William Gilbert, whose "De Arte Magnetica" laid the foundations of the modern study of electricity and magnetism.

Death of Guillaume Budaeus, great humanistic scholar of France and royal librarian.

Death of St. Angela Merici, founder of the Catholic teaching order of St. Ursula or the Ursulines.

Founding of the University of Macerata, Italy.

The Society of Jesus, or Jesuits, organized six years earlier by Ignatius Loyola, sanctioned as an Order of the Church by Pope Paul III, laying the foundation for the most influential educational order of the succeeding centuries, with an enrolment in their colleges and universities of more than 200,000 students.

1640

Death of Peter Fourier, founder of the Congregation of Notre Dame.

Publication of the "Bay Psalm Book" at the Stephen Daye Press in Cambridge, Massachusetts, the first book produced in the United States.

Establishment of the first Catholic school in the English-speaking colonies of North America, at Newtown, Maryland.

Henry Dunster becomes "first real president" (succeeding Nathaniel Eaton as "master") of Harvard College.

Richard Busby became head master of Westminster school, famous English public school, a position which he held until his death at age of 90, or 55 years.

1740

Death of Christopher Semler, German educator associated with Francke, who was probably the first to use the term *Realschule* in a paper "Upon the Mathematical, Mechanical, and Agricultural Real School in the City of Halle."

Publication in England of Dilworth's "A New Guide to the English Tongue," an important textbook which ran through many editions in England and was reprinted in New England.

University of Pennsylvania opened.

1840

First issue of the *District School Journal for the State of New York*, at Albany.

State aid for Infant Schools in France began.

Enactment of first child-labor law in any American state, in Rhode Island.

Death of Joseph Jacotat, French educator, originator of a famous method for teaching languages.

Froebel first used the name *Kindergarten* for his German school for small children.

First teachers institute in New York held.

First teachers institute in the country held at Hartford, Connecticut, under the direction of Henry Barnard.

Establishment of a public high school at Middletown, Connecticut.

Opening of the third normal school in the United States, at Bridgewater, Massachusetts.

Bethany College, West Virginia, chartered.

Saint Mary-of-the-Woods College, Indiana, founded.

Xavier University, Ohio, organized under the Jesuits as St. Xavier College.

Mount Morris College, Illinois, opened.

First college medical clinic in the United States established by Dr. William Parker, at College of Physicians and Surgeons in New York City.

First university library building in the United States, at the University of South Carolina, completed.

THE TWELFTH PRESIDENT OF THE UNIVERSITY OF TEXAS INAUGURATED

HOMER PRICE RAINEY was formally inducted on December 9 into the presidency of the University of Texas by J. R. Parten, chairman of the board of regents. The inauguration ceremony was the climax of a three-day conference on "The State and Public Education," which was announced in SCHOOL AND SOCIETY, December 2.

In his inaugural address, Dr. Rainey discussed the contributions of a state university to the freedom of the people. He said that the "few" donors supporting endowed institutions do not

> . . . necessarily possess a keener appreciation of the values of freedom than do the *many* taxpayers. . . . A university has a distinctive rôle to play in the development of a state—a two-fold obligation, if you will—namely, to aid the people of the state in the determination of their social goals, and to develop the techniques and provide the intellectual leadership necessary for the achievement of these goals.

Among the speakers on the inaugural program was Chester H. Rowell, formerly editor of the *San Francisco Chronicle*, who took the position that

> . . . unless research peers every day beyond the borders of the known, the traditions of the known

stagnate into formalism. Unless there shall be here that freedom to investigate, guided by the truth alone, and to proclaim the results of that investigation, regardless of whether they are popular in the seats of power or not, the torch of enlightenment will be quenched to a smouldering spark, to be rekindled only when the breath of freedom blows on it again.

Clarence A. Dykstra, president of the University of Wisconsin, believes that

. . . for the successful administration of a democracy we must depend upon public servants who are above reproach and youth must have faith in the ethical and moral integrity of their society and its leaders. . . . Some day perhaps a state institution will say to its young people, "If you are capable but unable to come because of the economic situation in your family, the state will seek you out and bring you to your educational opportunity."

According to Luther H. Gulick, director of the Institute of Public Administration, New York,

. . . we believe in free public education because we know that an illiterate voter is dangerous to us all, especially now the economic illiterate. We believe in equal educational opportunity based on merit because we do not want on this continent any vestiges of the class system of old Europe, and we know that free education is one device by which the formation of hereditary classes can be blocked and by which ability may be given a chance to rise.

In his address, George F. Zook, president of the American Council on Education, said:

Knowledge must be supplemented by a process of enabling young people to formulate opinions. Universities must be stimulators and encouragers of youth to mould opinion. . . . No university, including the University of Texas, costs anybody a red cent. But a lack of a university would cost the citizens of Texas everything in life.

Dr. Rainey succeeds Harry Yandell Benedict, who died two years ago.

THE PRINCIPAL'S PERSONAL LIABILITY IN CASE OF ACCIDENTS TO PUPILS

PRINCIPALS in New York State have been warned by Harry R. Rosenfield, confidential secretary to Alberto C. Bonaschi, commissioner on the New York City Board of Education, that they may be held personally liable for injuries resulting from accidents occurring in school. In an article written for *Principal,* official publication of the New York Principals Association, Mr. Rosenfield, who is a member of the bar, said that teachers have been so concerned with their fight for tenure, respectable salary and working conditions that they have "ignored the inherent liabilities existent in the everyday classroom situation."

While there are no recorded cases of serious injuries resulting from the practice of using pupils as traffic patrols, attorney-generals and law officers of departments of education have stated that principals would be held responsible for such injuries. Charles A. Brind, director of the law division of the New York State Department of Education, has stated that in making such assignments principals are acting in a personal capacity. Other authorities have maintained that properly restricted and properly supervised street patrols are legal, but that liability would be fixed on the principals, should any negligence in administration be found.

The question of what constitutes negligence has not been settled. However, from the progress of some cases now on trial it seems that principals will have to assume responsibility for accidents to unlicensed teachers while on assigned duties. Mr. Rosenfield adds that teachers in New York are not fully protected by a statute recently passed which fixes the blame on the board of education for school accidents. The new law applies only to "duly appointed" teachers and acts "within the scope of employment." Extra-curricular activities are not mentioned.

THE PEOPLE OF THE VIRGIN ISLANDS DESIRE IMPROVED EDUCATIONAL FACILITIES

TEACHERS and interested laymen have united to solve the many educational problems facing the schools of the Virgin Islands.

Demands for a more modern educational system have led to the passage of a law by the Legislative Assembly patterned after the laws prevailing in many progressive cities in the United States. C. Frederick Dixon, superintendent of education, has endeavored to have the schools of the Virgin Islands placed under the direction of the U. S. Office of Education, so that aid could be received from the federal government for vocational education. Such

financial aid is now granted to Puerto Rico and Hawaii. More money is also needed for teachers' salaries.

Governor Lawrence W. Cramer has proposed that the former marine barracks in St. Thomas be converted into a high school. Federal funds are necessary for this project also.

Twenty-five per cent. of the population of the islands attend the fourteen schools now in operation. There are seventy-seven teachers in these schools. Approximately 23 per cent. of the total budget is allotted to education.

A report in *The Christian Science Monitor* states that visitors are impressed by the culture and alertness of the people, despite the lack of educational facilities.

HIGHER EDUCATION IN CHINA ADVANCES IN SPITE OF WAR

A SURVEY of the present status of higher education in China published in the *China Institute Bulletin* for October is summarized in the November *Bulletin* of the Institute of International Education. The history of modern Chinese education is divided into four periods:

In the first period, which covered the last years of the Manchu dynasty, the educational theory predominating was that "Chinese philosophy constitutes the essence and Western science the function" of education. In 1909 twenty-four institutions of higher learning had a total enrolment of 4,876 students.

The second period began with the founding of the Republic in 1912. Chinese education soon followed the world trend by emphasizing science and democracy. In 1917 there were only ten universities; many of the institutions established under the monarchy were suspended.

Between 1922 and 1928 emphasis was upon the natural and social sciences. By 1924 there were 34 government universities and 13 private universities.

The latest period dates from 1928, when the educational principles of Sun Yat-sen were introduced. Chinese education "sought to inculcate the national ideal and spirit in the mind of Chinese youth." In 1936 there were 41,922 students in 108 institutions, 42 of which were universities, 34, independent colleges and 32, technological and professional schools. Twenty-nine of these institutions were established by the national government, 28 by provincial and municipal governments and 50 by private enterprise. The Academia Sinica and the National Academy of Peiping, both consisting of a number of research institutes, also were founded by the national government. Academic societies increased from 44 to 159 between 1925 and 1938.

The outbreak of war caused many institutions to combine and move westward. To-day students whose universities have been destroyed are admitted as "guests" in nearby institutions. The Ministry of Education reports that since the beginning of the war about 2,830,000 books have been lost from 40 institutions. Loans to students have been arranged where necessary.

The education program at the present time seems to reflect the traditional Chinese idealism in the emphasis that it lays on moral discipline. Academic standards have been raised rather than lowered as a result of the war. More teachers are being trained in the now independent normal colleges. Research institutes are being established. In 1938 a unified entrance examination system for government universities was inaugurated. Honor graduates of government high schools are exempt from these examinations.

Based upon the experiences of the ancient Chinese educational system and the system at Oxford and Cambridge, a new tutorial system has been initiated by the Ministry of Education. Despite the war Chinese delegates attended seven international academic and scientific conferences last year.

EDUCATIONAL NOTES AND NEWS

NICHOLAS MURRAY BUTLER and John Dewey were awarded the Order of the Jade on December 20 by Tsune-chi Yu, Chinese Consul General in New York City, for their services in the education of Chinese students. In presenting the decoration to Dr. Butler, Dr. Yu said that China recognized the president of Columbia University as a great friend of China and "captain of a wonderful educational institution that has imbued thousands of Chinese students with imperishable ideals by virtue of which they have become leaders in various walks of life in

China." The citation for Dr. Dewey described him as "one of the greatest philosophers in the history of philosophy, a master of human nature, enemy of no nation or men but of international injustice."

APPOINTMENTS, PROMOTIONS, ELECTIONS, RESIGNATIONS

JOSEPH F. NOONAN has been appointed president of the East Stroudsburg (Pa.) State Teachers College. Dr. Noonan, who has served as a teacher and principal in high schools in Pennsylvania and New Jersey, will assume his duties at the college on January 1. Prior to accepting the presidency of the Mansfield (Pa.) State Teachers College in 1937, he had served as superintendent of the Mahanoy (Pa.) Township schools for twenty years and of the Mahanoy City schools for two years. In 1928 he was elected president of the Pennsylvania State Education Association. Daniel W. La Rue, chairman of the department of education, has been acting president of the college since the trustees vacated the presidency held by T. T. Allen.

THE REVEREND WALTER SMITH KILPATRICK, twenty-six-year-old Presbyterian pastor, has been elected president of Cedarville (Ohio) College. Mr. Kilpatrick succeeds W. R. McChesney, who resigned last June. Dr. McChesney, president emeritus, will continue as acting head of the college until Mr. Kilpatrick assumes his duties in September, 1940.

LEON WILSON HARTMAN was inaugurated as the sixth president of the University of Nevada on December 15. Dr. Hartman has been a professor of physics at the university since 1909.

TUCKER BROOKE, general editor of "The Yale Shakespeare" series, has been appointed visiting professor of English for the spring term at the College of the City of New York. Dr. Brooke, who is Sterling professor of English and fellow of Calhoun College, Yale University, and author of books on Christopher Marlowe, the Tudor drama and numerous studies of Shakespeare's works, will lecture once a week to the students enrolled in one of the Shakespeare courses.

THE College of Education, University of Illinois, reports the following promotions: O. F. Weber, from associate professor to full professor; L. W. Williams, from instructor to assistant professor; A. F. Dodge, from assistant professor to associate professor, and M. K. Humble, W. E. Harnish and Liesette J. McHarry, from associate to assistant professor.

WILLIAM D. STRATFORD has recently been appointed to the staff of Teachers College, University of Cincinnati, as instructor in education. He was formerly assistant to the secretary, Teachers College, Columbia University.

SUSAN B. HILL, formerly on the personnel staff of the Iowa State Teachers College, Cedar Falls, is the new dean of women at Michigan State Normal College, Ypsilanti.

LEONORA A. SMITH, who was a teacher in the Central School, Hollywood (Fla.), is assistant professor of education at Western Carolina Teachers College, Cullowhee, N. C.

EDNA VAN HORN, formerly associate editor of *Better Homes and Gardens*, has been appointed assistant professor of household administration at Oregon State College, Corvallis.

ROY F. STREET, until recently director of mental hygiene for the Battle Creek (Mich.) public schools, is a visiting professor of education at the University of Illinois.

DOUGLAS SPENCER has been appointed assistant professor of psychology at Queens College, Flushing, N. Y. Dr. Spencer was formerly acting director of the guidance laboratory, Teachers College, Columbia University.

SAMUEL R. MCCLEERY was recently appointed superintendent of the Jefferson Farm School, Watertown, N. Y. He was formerly on the staff of the Edwin Gould Foundation, New York City.

J. B. SMITH, formerly chairman of the division of fine arts at Adams State Teachers College, Alamosa, Colo., has been appointed head of the art department of the University of Wyoming.

SADIE O. MORRIS, new head of the home economics department at Eastern Illinois State Teachers College, Charleston, was formerly associate professor of foods and nutrition at the Agricultural College of Utah, Logan.

RUTH G. STRICKLAND is now assistant professor of elementary education, Indiana Uni-

versity, Bloomington, having left her former position as director of elementary education, State Teachers College, Emporia, Kans.

MABEL SEEDS SPIZZY is the new head of the music department of the Reedley (Calif.) Joint Union High School and Junior College.

THEODOSIA STRATEMEYER is a teacher of the social studies, middle school, Fieldston School, New York City. Miss Stratemeyer was formerly a teacher in the junior high school of the demonstration school, State Teachers College, Trenton, N. J.

A. LOUISE AGNEW has been appointed professor of chemistry, Limestone College, Gaffney, S. C.

RUTH SWICKEY is supervisor of elementary schools, Millville, N. J.

RUTH THOMAS has been appointed assistant professor of physical education at Mississippi State College for Women, Columbus.

MARIE ALEXANDER is supervisor of instruction, Isle of Wight County, Windsor, Va.

ELIZABETH S. THULIN is social director of Currier Hall, State University of Iowa.

O. F. WEBER, professor of education, University of Illinois, has been elected president of the East Central Division of the Illinois Education Association.

TRACY F. TYLER has been appointed associate professor of education at the University of Minnesota.

PEARL E. BROWN is assistant professor of art at Louisiana Polytechnic Institute, Ruston.

BLANCHE BAKER has been appointed dean of women at John Brown University, Siloam Springs, Ark.

CLIFFORD JOHN CORROUGH has been appointed director of vocational guidance in the Ferndale (Mich.) public schools.

MARIAN LEAMING WILSON, remedial reading specialist, has accepted a post at Girard College, Philadelphia, Pa.

P. JOSEPH WINKFIELD is youth personnel counselor of the NYA, Columbus, Ohio.

LLOYD PERCY YOUNG has succeeded Wallace Edward Mason as president of the Keene (N. H.) State Teachers College.

CLAIRE H. FAVREAU has been appointed supervisor of nursing education in the State Education Department, Albany, N. Y.

RECENT DEATHS

PAUL GARFIELD WESTON, formerly professor of pathology and bacteriology at Temple University, Philadelphia, died in Jamestown, N. Y., on December 18. Dr. Weston was founder and director of the Jamestown Public Health Laboratory.

HARRY KEELER, assistant superintendent of the Chicago public schools, died on December 19 at the age of sixty-four years. Mr. Keeler had been associated with the Chicago schools for forty-one years.

EDWARD DU BOYS STRYKER, retired New York City elementary school principal, died on December 19. Mr. Stryker was seventy-five years of age.

SARAH E. SCOTT, who began her career as a teacher in the then city of Brooklyn (N. Y.) in 1860, died at the age of ninety-eight years on December 20. Miss Scott was prominent not only as a teacher and a principal but as a leading figure in the establishment of public high schools and teacher-training schools. She was a member of the staff of the Training School for Teachers (later the Maxwell Training School for Teachers) from its founding in 1885 to 1904. In 1912, Miss Scott was the first teacher affected by the board of education ruling specifying that those reaching seventy years of age were to be retired.

MARION ERNEST TOWNSEND, president of the Newark (N. J.) State Teachers College, died at Glen Ridge, N. J., on December 21 at the age of fifty years. Dr. Townsend was widely known as a pioneer student of guidance and personnel problems in the professional education of teachers. Before assuming the presidency at Newark in 1929, he had been assistant commissioner of education for the state of New Jersey, and earlier in his life had filled superintendencies at Walden, N. Y., Boonton, N. J., and Millville, N. J., and an assistant superintendency at Trenton, N. J.

CHARLES ZELENY, research professor of zoology at the University of Illinois since 1909, died on December 21. Dr. Zeleny, who was sixty-one years old at the time of his death, had been head

of the zoology department from 1933 until his retirement in 1938. He had taught at the University of Minnesota, the University of Chicago and Indiana University before his appointment at the University of Illinois.

COMING EVENTS

A CONFERENCE on criminology will be held at Bucknell University, January 5 and 6. Sociology students of more than ten Eastern colleges, officers serving internships with the Federal Board of Prisoners and criminologists from state and federal penal institutions are expected to attend the conference, the theme of which will be "The Development of a Criminal Career."

THE Association of American Colleges will hold its twenty-sixth annual meeting at the Benjamin Franklin Hotel, Philadelphia, January 11–12.

THE Progressive Education Association district meeting will be held at the Nicollet Hotel, Minneapolis, Minn., January 11–13. Delegates from Michigan, Wisconsin, North Dakota and South Dakota are expected to attend.

THE Pan-Pacific Women's Conference will meet in the offices of the Pan-Pacific Women's Association, Wellington, New Zealand, January 11–26.

A REGIONAL conference of the Progressive Education Association will be held in Urbana, Ill., January 12 and 13. The general topic of discussion will be "Resources and Education." Thomas E. Benner is chairman of the committee in charge of the conference.

THE sixth annual conference of secondary school students will be held at the Drexel Institute of Technology on January 13. Students representing several hundred schools in Pennsylvania, New Jersey and Delaware will participate in the seventeen sectional meetings of the conference. Cameron Beck, counselor on vocational and industrial relations and formerly educational director of the New York Stock Exchange, will address the general assembly.

SCHOOL SURVEYS

THE recent survey of the Galesburg (Ill.) public schools by staff members of the College of Education, University of Illinois, has had tangible results in the construction of five new school buildings at a cost of $1,500,000 and the initiation of important curricular changes. Associated with the survey were Thomas E. Benner, dean of the College of Education, and O. F. Weber, E. H. Reeder and J. A. Clement, professors of education.

THE division of field studies of the Institute of Educational Research, Teachers College, Columbia University, George D. Strayer, director, has agreed to undertake a comprehensive survey of the public schools of Pittsburgh, Pa. The work of the inquiry will be directed by members of the Teachers College staff, including Professor N. L. Engelhardt, associate director of the division of field studies; Professor H. L. Caswell, director of the division of instruction; Professor Jesse H. Newlon, director of the division of foundations of education; Professors John K. Norton, Willard S. Elsbree, Will French, Edwin A. Lee, Ruth Strang, W. B. Featherstone, Dr. Henry H. Linn and other members of the professorial staff of Teachers College. The work of the survey will be completed and a report submitted by June 1, 1940.

GEORGE F. ZOOK, president of the American Council on Education, recently announced that the council had received a grant to conduct an exploratory study of the needs of American educational institutions in the present international crisis. Francis J. Brown, professor of education, New York University, has joined the council's staff as a special assistant for a three-month period to work on this problem. Dr. Brown will investigate the desirability of preparing teaching materials or facilitating the distribution of existing materials relating to such subjects as the sources and methods of propaganda, backgrounds of war, American neutrality and ways and means of effecting world peace.

SHORTER ARTICLES AND DISCUSSION

TEACH VOCATIONS IN SUMMER

A CENTURY ago Horace Mann gave much of his energy to building up sentiment in favor of the free public high school. An extension of secondary education to provide for adequate training of citizenship is far more urgent to-day than the public high school was a century ago. Yet, at the very moment when the need is for

extended civic education, the complications of a changing industrial system call also for a more extended vocational training. Extended unemployment further increases the necessity of thorough training in at least one vocation in order to meet the competition in the present-day world. The constant changes of technique in many industries add to the necessity of training in more than one vocation. Indeed, a basic training in some broad field with specific training in several aspects of that field is desirable.

To some degree, the extended unemployment of the present period leaves the way open for the lengthening of the public school program and thus allows for the addition of a considerable period for vocational education. But there are limits to the extension of the education period due to the social traditions and psychological urges that demand the independence of the individual before he has gone far in the twenties. The urge for self-expression, for constructive achievement, as also the urge for homemaking and independence, added to the basic urge for security, increase the difficulty of extending the education period much beyond middle adolescence.

In a sense, then, the necessity for increasing the period of civic education and for increasing the period of vocational education sharply compete. There are thousands of youth who must choose between vocational training and further civic training. By the age of twenty or twenty-one a great army of young men and women will leave the public schools whether or not they have received the training necessary to assure their happy adjustment to the industrial and social world. If the problem is to be solved it must be solved by attacking it from a new direction.

This direction is indicated by the very changes in industrial life which call for extended vocational education, namely, the change from agricultural to industrial organization. When the majority of families lived on farms boys and girls were needed during the summer season for sowing, cultivating and harvesting the crops. It was necessary to close school when the rush of farm work began. It was impossible to begin school successfully until that rush had ended. Only the more idle winter months were available for the education of the great majority of boys and girls.

To-day that condition is completely changed. The great majority of boys and girls live in villages or cities. A comparatively small number are actually needed on farms during the summer season. Even children of farmers are often free to continue school as long as the session lasts and to begin whenever school opens. Many of them, indeed, travel from their farms to the school in automobiles.

For a relatively large proportion of youths, then, the summer season is open for whatever education society finds it worth while to offer them. For a few, though only a relative few, summer camps offer the best opportunities for the development needed by boys and girls crowded in the cities during the rest of the year. For a relative few, automobile traveling around the country with their parents is an educational opportunity. But for the vast majority, the summer season is a time of freedom from responsibility. For many, indeed, it is a period of unguided leisure, as social workers in every large city testify. Wherever gangs develop increased activity during the summer time, much of the civic education given during the term is more than offset. Vandalism and destructive tendencies thrive in free time where leadership and guidance are lacking.

Vacation, then, offers an excellent opportunity for further education. At the secondary level tradition still favors a complete change from the academic program; but the fact that academic work during the summer period can be accepted has been proved in the field of higher education by the remarkable development of summer schools. While these appeal to the more gifted and far-sighted, nevertheless the change in their habits indicates that a break from tradition is altogether feasible. For the present, however, it may be wisest to make the summer school program quite different from that of the regular winter session. This is possible and fits perfectly into the needs of the present time.

The plan clearly indicated by the data just cited is to devote the summer period to vocational training. Extend the high school as far as possible and concentrate on the training of citizenship and culture during the regular term. Provide vocational courses at the end of the high school program for those who can not or choose not to attend summer school. But for all who

are free to attend vocational schools in summer, provide definite concentrated training schools in several vocations.

In the light of current trends as indicated by the recent report of the Regents' Inquiry in the state of New York and by the recommendations of the Educational Policies Commission, it seems reasonable to assume that the norm of the public school in the near future will be a six-year elementary school followed by eight years of secondary training. This eight-year period is likely to be divided into two equal parts, thus providing for a six-four-four plan. The name "junior high school" is almost certain to yield to the simple term "high school" for the first four-year unit of the secondary period, and the time-honored name "college" is likely to be applied to the second four-year unit of the secondary period. These are matters that call for separate discussion.

For the present purpose let us assume that a six-four-four plan will become a standard program for public education systems. Let us assume that in many states attendance in schools will be required up to the age of eighteen. Many varieties of organization will continue for a long period of time—perhaps permanently. But the general set-up described can be used as a basis for planning.

The conflicting needs of civic training and vocational training can be met for a large number of youth by the following plan. In the first of the 4-year units—the high school, as designated above—offer exploratory courses including from six to twelve of the vocations into which the majority of youth in that area are likely to enter. These exploratory courses on the one hand should not involve actual training in skills in the various vocations, nor, on the other hand, merely academic study of books about these vocations. Rather they provide opportunities to get the feeling of the vocation from the inside, to sense the nature of the work and the opportunities, the difficulties as well as the attractions, the kind of preparation and the qualities of personality required for success, the kind of associates likely to be found and the conditions under which work must be done.

To all who have completed this period of exploration, open vocational schools in the fields in which exploratory courses have been provided. Offer a two-summer term of basic training in the general principles needed in each major field. This will be a shop or laboratory course rather than a text-book course, although it will be necessary to provide for the mastery of certain information in each field. After two summers of such basic training provide a third summer of specific training in the applications of these principles to one or more definite and limited phases of the vocations involved. This final term's work will need to be modified as conditions of industry change. The newest tools and techniques will need to be provided during this period.

The training should be so thorough and specific that those who complete the course will be able to take up the skilled work in the field without a period of apprenticeship. Indeed, they will need to be thoroughly prepared to meet competition with the less thoroughly trained workers in the field.

When a pupil studies but one vocation, three summers will usually be sufficient. If he chooses to prepare for two vocations then he should take two terms of basic work in one field and follow these with two terms of basic work in the second vocation. After completing the foundation training in both fields, he will take the finishing courses in each of the fields in two successive summers.

Some pupils may require three terms of basic training rather than two. Some, indeed, may require two terms of specific application where skills required are unusually intricate. In general, vocational training of the typical youth can be completed in three to six summers.

For the normal youth who completes his elementary school work in six years by the age of twelve, and spends two years in exploratory courses, the vocational courses will be available by the age of fourteen. Three summers will complete his training at the age of seventeen. If the state law permits he may then leave school, having completed five years of secondary training devoted wholly to cultural and civic education. If the age limit is eighteen years, he may either postpone the summer training a year or take a vacation one summer out of the three. In any event, the last summer before he intends to leave school and enter the industrial field should be devoted to the final term of training

in specific vocational application. The youth who is willing to continue school to the age of twenty will be able to complete two three-summer programs of vocational training prior to his last year in school.

The program here proposed can readily be recognized as adaptable to youths with varying educational ambitions. One may satisfy the minimum needs for vocational training and secure five years of general culture and civic education by the age of seventeen or, if retarded for a year, by the age of eighteen; or he may extend his program of general education, preparing for a richer enjoyment of life and a more intelligent adjustment to the world in which he lives, and add two fields of vocational training all before reaching the age of twenty.

It is thus possible for the millions who are to work in industrial fields to secure a reasonable education of the kind that will make them intelligent citizens, enable them to enjoy life with a high degree of enrichment and at the same time prepare them to compete in the vocational world —all this without the extension of the period of school attendance beyond the age of twenty. The normal desire for marriage, independence and security will thus not be made a competitor to the ambition for broad education and vocational skill.

Discussion of this proposal will bring forward many corollaries for which space is not justified at the present. Certain advantages are particularly obvious. The school equipment for vocational training will not lie idle during one fourth of the year. The training of vocational teachers will become increasingly functional. Better planned and better supervised recreation will be available to the thousands of youths who attend these summer vocational schools. Vocational courses during the regular term will not constitute so strong a temptation to forego needed civic and cultural training.

Much of the value of this program will be lost unless the public high school and college greatly improve the quality of the cultural and civic training offered. Where high school courses are academic and formal and fail to prepare for actual conditions of living there is little argument for extending them or keeping them free from the competition of the fascinating vocational courses.

The preservation and progress of society requires the induction of the adolescent members into such forms of life as will enrich the quality of living for all. Mere formal encyclopaedic information about science and history is not true culture. A radical change from the fact-giving courses which remain aloof from the values of life is called for.

And what is true of culture is at least equally true of civic education. "An intelligent citizenry is the best defense of democracy" only when that intelligence is motivated by high concern for the welfare of society. Without training for social concern, instruction in civic data is altogether lifeless. The complexity of modern society and the increasing difficulty of the problems which society must solve call not for a mere extension of time to be devoted to the study of political and civic problems, but a change in the type of training offered.

The cultural training and education for civic efficiency are indispensable to the perpetuation and progress of democratic society. The extension of the period of public secondary education and the removal of competition by vocational training are justified only to the degree that education is genuinely cultural and that civic training does produce civic efficiency.

With the separation of vocational training from the regular school year for a large number of pupils a new challenge will be given to the secondary school to provide such effective civic and cultural training. At the same time vocational teachers will have an opportunity to prove what can be achieved in their own fields when full time is devoted to the single task of preparing for a given vocation.

HAROLD S. TUTTLE
THE COLLEGE OF THE CITY OF NEW YORK

PROVISIONAL ACCEPTANCE OF CANDIDATES FOR ADMISSION TO COLLEGE[1]

SOME years ago a New England college announced its willingness to assure a limited number of candidates for admission of their acceptance at the end of their junior year in the secondary school, and this experimental use of

[1] Based upon remarks made at a symposium conducted on October 25, 1939, by the College Entrance Examination Board, New York.

the method of provisional acceptance continued for some years until changes in the admission procedures at that college rendered the special plan of "junior admission" meaningless. Proposals have recently been made in some quarters for a more general use of the plan. (It is to be distinguished from what is known as Plan C of the College Entrance Examination Board, because this latter scheme merely divides the examinations taken by the students by colleges which prescribe them into two groups, thus obviating the serious limitations of the old Plan A and some of the severities of Plan B). "Junior admission," properly understood, has nothing to do with the number of examinations which may be required by any particular college. It is simply a provision that in a certain number of cases the criteria of a given college for admission may be applied at the end of the junior year and suitable candidates notified then that they will be admitted a year later, provided that the senior year in school is entirely satisfactory. It has been pointed out that there is some similarity between this plan and the procedures followed in England, where candidates meet the standard admission requirements of Oxford or Cambridge a year or a year and a half before they actually enter the university. In the intervening period they are free to concentrate upon subjects of special interest to them and, in many cases, they take special scholarship examinations required by the college of their choice.

There is much to be said for any arrangement which brings the candidate, the school and the chosen college into close cooperation at an early stage in the student's school program, so that there may be definite coordination between the program followed in school and the purposes which will guide the student when he reaches college. "Junior admission" necessarily calls for action by the college on the basis of reports from the school and, presumably, rests upon a careful appraisal by the college of the serious purposes of the candidate. This ensures a contact which may and should be valuable to the applicant. More important, however, is the opportunity which "junior admission" may provide for some modification of the senior year in school in the interest either of specialization, where this may seem to be in the candidate's best interest, or of such flexibility in the choice of studies as would not be possible if the student were bound to continue as a candidate in competition with others in a standardized program.

It seems very important to set forth certain provisos which should be recognized and accepted if any such scheme is not to do more harm than good. There is, first, the danger that some institutions might be tempted to use it merely as a means of capturing candidates considered by them to be outstanding. And there is the danger also that the selection of a few individuals in a given school for the privilege of such advance assurance of admission might seriously interfere with the morale of their fellow-students. To avoid these dangers any program to be followed in the senior year by a candidate who has been practically assured of admission later should be one planned and agreed upon by the school, the parent and college officials; and it should be one that is best calculated to promote the student's development and to challenge his powers. To assist in planning such a program may seem to lead the college into a field which it has hitherto considered beyond its province. But we must in some way break down the compartmental barriers which divide school and college, so that such guidance as is given to a student may represent the cooperative judgment of his school and his chosen college, and so that transition from the one institution to the other may be made more smooth and simple.

The program to be followed by a senior in school who has been given early assurance of admission should be one which includes one or more studies in which a considerable degree of independent study is possible. This statement presupposes that one of the marked differences between school and college is that in college there will be a developing demand upon the student for self-direction. It is surely the mark of a good mind that it is capable of undertaking to-day more or less difficult tasks in the pursuit of a goal which is as yet out of sight and without the pressure or incentive of immediate examination by others. Certainly in college the span of attention should be broadened so that toward the end of a college course a student may see special areas of investigation not as fragmentary objects to be learned about in isolation but as parts of a vast interrelationship of fields of knowledge. Methods under which tasks are assigned to-day and the student's response is examined to-morrow or next week are *not* designed to develop

the capacity of the student for independent and systematic effort. If it is desirable, as it is here claimed that it is, to emphasize the development of this capacity, those who are going to college should not first encounter such a responsibility *after* they have entered college. They should know something of what it means during the school years. One step which a good school can take to prepare its students for college is to extend the period between the undertaking of a project and the testing of achievement.

If such independent study is to be undertaken as a part of the more significant final year made possible for able students by "junior admission," the school should be in a position toward the end of the senior year to provide the college with definite descriptions and appraisals of the special studies undertaken and with evidence of the student's achievement. For at this stage there might well be grave danger in encouraging a student to undertake tasks of special interest to himself without making it clear to him at the inception of the program, during its progress and at its close, that in such work he is expected to demonstrate superior capacity and effort.

The adoption of any such scheme of "junior admission" would make possible the inclusion in the senior school year of some significant activity, under expert supervision, either in the arts or in a project involving application of mathematics and science. Many schoolmasters now deeply deplore the difficulties they encounter when they try to provide a place in the program of students preparing for college for those highly desirable and entirely legitimate disciplines of the mind and the emotions which are found in self-expression through the creative arts and in constructive projects. Some schools have, however, made striking progress in meeting the need in adolescence for the outlets provided by the creative arts and the applied sciences. It should become more widely possible to meet this need, perhaps particularly in the case of those who are showing superior intellectual gifts and who may, therefore, be expected to undertake a high degree of specialization after entering college.

One further comment should be made. If a number of colleges should at some time enter into an agreement supporting this plan of "junior admission," institutions using the plan must be discouraged from giving assurances to candidates during or at the end of the junior year unless the individuals concerned take such tests and examinations as may most suitably correspond to those which will be taken by other candidates a year later. The results of such examinations should justify the special consideration extended to any individual. In other words, such a plan should never be open to the criticism that it has permitted favoritism extended to particular schools, or has provided special arrangements which release favored individuals from demonstrating adequately and objectively their readiness to take full advantage of the modifications of their senior year which may follow early admission.

If some such restrictions or provisos as have been outlined above can be generally adopted, there would seem to be no serious objection to the use of the plan. Those who have been particularly interested in considering its advantages and dangers would welcome full discussion, particularly from the point of view of the schools.

HAROLD E. B. SPEIGHT
SWARTHMORE COLLEGE

EDUCATIONAL BOOKS

THE MOTIVE BACK OF THE CHARITY SCHOOLS IN COLONIAL PENNSYLVANIA

The Relations Between the Pennsylvania Germans and the British Authorities (1750–1776). By ARTHUR D. GRAEFF. 271 pp. Published privately and copyrighted by the author, 1939.

BOOKS on the history of American education have usually emphasized the educational and religious aspects of the charity-school movement among the Germans of Pennsylvania. The contribution of the volume under review, submitted in partial fulfilment of the requirements for the degree of doctor of education in Teachers College, Temple University, consists chiefly of showing how the true motive behind these schools was more nearly akin to "political expediency" (p. 33) than to either education or religion. Dr. Graeff states that "Citizenship schools, or An-

gelicizing schools would define the movement in terms of its aims" (p. 33).

This narrative defends the loyalty of the Germans to the British. It places the blame for the attacks against the Germans where it probably belongs, to wit: on the shoulders of Dr. Benjamin Franklin and the Rev. Dr. William Smith and other Pennsylvania politicians of the time. The colonial politicians were not linguists any more than are their successors in the modern world. Many of the Palatine Germans spoke three languages easily. The Pennsylvania politicians distrusted the Germans partly because they could speak to the French enemies of the British in the Ohio River regions. Even after the Germans showed their loyalty by pouring forth their wagons and horses to aid General Braddock at Franklin's request, the distrust of the Germans continued to dominate the minds of the Pennsylvania Fathers.

Liberty-loving Germans resented the motive back of the charity schools and the active opposition of German leaders such as Christopher Saur, the printer of Germantown, succeeded in keeping the schools from achieving any great success among the Germans. Late in 1754 Saur wrote in his newspaper:

> The new society in England deserves praise for being so liberal and so kind to teach Germans the English tongue gratis. But if Schlatter has accused the Germans to such a degree and represented them as if they were a nation so roguish and mischievous a disposition, that in time of war they would probably join the French and villainously espouse their cause, he has most certainly acted with great imprudency to the disadvantage of the King as well as himself. None indeed will permit himself to think that many Germans could be so treacherous. The Irish, the Swedes and the Welsh keep their languages yet for all that they are not so looked upon as disloyal people. Oh, that truly pious schoolmasters in the English tongue might be given to them. (pp. 46–7.)

Even the establishment by the London Society for the Propagation of the Gospel of a German press dedicated to the service of counteracting the influence of Saur's newspaper (Benjamin Franklin sold it to the society and contributed one fifth of its cost himself) did not prevent the eventual failure of the schools.

The Germans probably rightly resented being stigmatized as ignorant and disloyal. However, as a powerful minority in the colony, they were too thrifty and successful ever to have escaped the suspicions of the English-speaking politicians of the period. Fortunately, the War for Independence came in time to eradicate these misunderstandings. The "liberty-loving Germans," having shared the struggle to achieve independence, "ceased to be foreigners and were merged inextricably with the great mass of people, Germans, Scotch-Irish, Welsh, English no longer, but all heirs to the proud designation as Americans" (p. 253).

The author, Dr. Graeff, is himself a descendant of one of the prominent Palatine families that settled in early Pennsylvania. Your reviewer finds no bias in his scholarly treatment of his subject, however. His background appears to have contributed to his ability to interpret his subject in an interesting and sympathetic manner. The study is well documented, and it is unfortunate that it has not been published in a manner that would make it more readily available to the reading public than it can be through private publication.

HARRIET H. SHOEN

NEW YORK CITY

EDUCATIONAL RESEARCH AND STATISTICS

PRIMARY MENTAL ABILITIES

RECENTLY the American Council on Education has published a series of tests of Primary Mental Abilities prepared by Professor L. L. Thurstone[1] and based on the research work reported in his

[1] What are here called factor scores, Professor Thurstone, in the material published with the tests, sometimes calls composite scores, sometimes scores in the primary abilities and sometimes factors. It should be clearly understood that in this report the factor scores refer to the scores obtained by the simple addition of the raw scores of two or three tests—the method advocated in the Manual. However, as the Manual points out: "Ideally, each primary score of an individual should be determined as a weighted sum of all his test scores." Nevertheless, the appropriate equations are not given and the ones on which Professor Thurstone has based his conclusions about this particular set of tests can not be determined by others unless they have access to his original data and to the specific rotations he used.

monograph, "Primary Mental Abilities," and on later studies. The edition of the test now available, and the one on which the following study is based, is called Experimental Edition, 1938.

The sixteen tests are arranged to be given in three sessions, the total testing time for which is two hours and thirty-three minutes. Each test is preceded by a practice exercise; a total of one hour and eight minutes is allowed for practice. The tests yield seven scores, spoken of as describing mental abilities or factors, which are said to be relatively independent, *i.e.*, uncorrelated. Each of these factor scores is obtained by the tests which are added to give the score on the factor or primary mental ability. These correlations are in italics. They vary from .20 to .79; the mean is .49, a figure somewhat lower than might be considered desirable. The tests added to give a single factor score are, in all cases, supposedly so designed that high scores indicate the possession of a high degree of the primary mental ability concerned. Thus these coefficients are, in a sense, reliability coefficients of the factors if the factors were based on tests only half (in most cases) as long. Ideally, these correlations should be very high, say, .80 or over.

TABLE I

INTERCORRELATIONS OF THE SIXTEEN TEST SCORES OBTAINED FROM THE THURSTONE TESTS OF PRIMARY MENTAL ABILITIES*

Tests	Identical forms	Verbal enumeration	Addition	Multiplication	Completion	Same–opposite	Cards	Figures	Initials	Word numbers	Letter grouping	Marks	Number patterns	Arithmetic	Mechanical movements	Number series
								Boys								
Identical forms		*.462*	.064	.196	.136	.266	.467	.381	−.020	−.054	.275	.291	.193	.029	.297	.130
Verbal enumeration	*.402*		.213	.342	.385	.496	.272	.291	.048	.012	.325	.239	.187	.152	.120	.224
Addition	.101	.252		*.729*	.126	.137	.165	.140	.217	.165	.277	.210	.209	.277	−.029	.281
Multiplication	.121	.333	*.786*		.150	.245	.188	.158	.150	.130	.287	.186	.149	.295	−.032	.262
Completion	.179	.342	.171	.213		*.611*	.130	.133	.148	−.031	.272	.199	.178	.381	.209	.296
Same–opposite	.236	.472	.298	.309	*.660*		.171	.254	.120	.012	.330	.185	.221	.334	.208	.294
Cards	.425	.234	.165	.164	.253	.226		*.731*	.105	.101	.354	.376	.380	.214	.418	.283
Figures	.396	.196	.139	.125	.255	.235	*.786*		.093	.066	.327	.347	.367	.188	.393	.278
Initials	.170	.140	.212	.221	.293	.264	.140	.162		*.494*	.165	.134	.142	.166	.012	.135
Word numbers	.010	−.058	.046	.076	.030	.066	.016	.020	*.452*		.089	.170	.025	.168	−.074	.126
Letter grouping	.306	.189	.251	.292	.338	.352	.311	.377	.240	.068		*.476*	*.405*	.373	.191	.411
Marks	.282	.077	.242	.226	.157	.194	.326	.327	.117	.025	*.404*		*.368*	.327	.302	.438
Number patterns	.221	.138	.160	.150	.194	.241	.444	.385	.089	.072	*.467*	*.401*		.327	.370	.402
Arithmetic	.128	.165	.424	.435	.423	.400	.346	.343	.298	.168	.425	.329	.322		*.298*	*.566*
Mechanical movements	.173	.116	.094	.100	.134	.111	.337	.279	.052	.044	.233	.197	.256	*.204*		*.302*
Number series	.184	.065	.400	.390	.307	.300	.388	.402	.266	.115	.498	.435	.362	*.598*	*.226*	
					Girls											

* The figures to the right of the diagonal white space in the table are the product-moment correlation coefficients based on the scores of 421 boys and the figures to the left of the diagonal in the table are the similar figures based on the scores of 252 girls. The groups were freshmen. The tests were given in September, 1938.

simple addition of the raw scores (number right) of two or three tests (in four cases the raw score is multiplied by two).

These tests of Primary Mental Abilities were taken by the freshmen entering the University of Chicago in the fall of 1938. The papers were lent for this study by Professor Ralph W. Tyler, the chief examiner of the University of Chicago.

Table I gives the product-moment correlations among the sixteen tests based (1) on the scores of the 421 boys and (2) on the scores of the 252 girls. All coefficients were computed twice independently for purposes of checking. Particular interest attaches to the correlations among the

Table II gives the differences between the pairs of corresponding correlations among the sixteen

TABLE II

THE DIFFERENCES BETWEEN THE CORRELATIONS OF SIXTEEN TESTS BASED ON THE SCORES OF BOYS AND THOSE OF GIRLS

$(r_B - r_G)$

Differences	Frequency
.15– .19	2
.10– .14	8
.05– .09	14
.00– .04	28
−.04– −.00	26
−.09– −.05	23
−.14– −.10	15
−.19– −.15	4
Total	120

tests for boys and for girls. There appears to be no clearly marked trend, although the correlations for the girls are, in general, slightly higher than those for the boys. In view of the fact that the standard errors of these coefficients vary from .03 to .06, the differences are about those to be expected in dealing with two samples of the same population.

There are 109 correlations between those tests which are not added together to give a single score. These coefficients should be low. They vary from −.07 to .49 (boys), but the majority of the coefficients, fifty-five in number, are below .20 and only five are over .40.

Table III gives the correlation coefficients

TABLE III

INTERCORRELATIONS OF THE SEVEN FACTOR SCORES OBTAINED FROM THE THURSTONE TESTS OF PRIMARY MENTAL ABILITIES*

Factors	Perception	Number	Verbal	Space	Memory	Induction	Reasoning
				Boys			
Perception ...		.262	.434	.428	−.001	.366	.232
Number	.277		.208	.189	.192	.284	.248
Verbal	.396	.305		.215	.090	.329	.409
Space	.388	.178	.280		.117	.497	.408
Memory	.113	.164	.237	.126		.170	.140
Induction ...	.316	.289	.345	.484	.171		.577
Reasoning ...	.246	.434	.430	.499	.284	.564	
				Girls			

* The figures to the right of the diagonal white space in the table are the product-moment correlation coefficients based on the scores of 421 boys and the figures to the left of the diagonal in the table are the similar figures based on the scores of 252 girls. The groups were freshmen. The tests were given in September, 1938. A similar table has been reported by William M. Shanner in Bulletin No. 27 of the Educational Records Bureau. He dealt with the results of 247 boys from grades XI and XII of a private school. The differences between his table of intercorrelations and the one here given suggests the importance of the nature of the population in the results. In every case except one his intercorrelations among the factors are higher than those here reported, and in a number of cases significantly higher.

(Pearsonian Product Moment) between the "factor" scores separately for boys and girls. These coefficients should ideally be approximately zero —practically one might set .30 as an upper limit. There are twenty-one intercorrelations among the seven factor scores. For the boys, eight of these, more than one third, are over .30, six are over .40 and one over .50. For the girls nine are over .30, five over .40 and one over .50. Most of the correlations are below .30. All correlations are positive except one (−.001).

There seem to be differences bordering on significance between the boys and the girls in the correlations between the factor scores of memory and perception, memory and verbal, memory and deduction, and number and deduction. The intercorrelations of tests involving the verbal factor are higher for the girls than for the boys in five of the six cases.

While some of the factors appear to be somewhat distinct, others do not. Of greatest doubt is the significance of the factors of induction and of reasoning. The correlation between these two scores is .58 for the boys and .56 for the girls. The three tests added together to make the score for the reasoning factor give intercorrelations of .30, .30 and .57. Tests correlating only .30 are added to give a score on a primary mental ability which itself correlates .56 with another supposedly independent primary mental ability score. There is greater independence of the tests making up this factor score than there is among many of the factor scores themselves.

An inspection of the tests suggests that perhaps the factor of greatest importance in this battery is speed, although speed does not emerge as a primary mental ability. By timing the tests so that very few subjects, even of the caliber admitted to the University of Chicago, are able to complete them, high split-half reliabilities may be obtained. There is reason to believe that speed is the principal factor causing the differences in the scores on some of the tests. Given ample time, probably the freshman group at the University of Chicago would answer correctly most of the items in the verbal test called "same or opposite," for example. On this test the candidates are required to pick the one of four given words which means the same as or the opposite of a stimulus word, and to make a response to twenty items each minute, if the test is to be completed in the time allowed. Slight errors in timing must assume importance in such cases, particularly since 69 per cent. of the items on this test were answered correctly by over 90 per cent. of the candidates attempting that or any subsequent item. Manual dexterity itself may be involved, to say nothing of speed of reading. Probably a different factor pattern would emerge if these very tests were given with a more generous time limit.

Table IV gives the percentage of candidates

TABLE IV

PROPORTION OF GROUP ATTEMPTING THE FINAL ITEM OF EACH TEST

Test	Per cent. attempting final item
Identical forms	3
Verbal enumeration	3
Addition	0
Multiplication	0
Completion*	20
Same–opposite*	6
Cards	19
Figures	0
Initials	46
Word numbers	86
Letter grouping*	1
Marks*	11
Number pattern*	2
Arithmetic*	19
Mechanical movements*	53
Number series*	3

* The proportions are based on a random sample of 300 books, except those marked * where the sample is the 421 boys

attempting the final item of each test. From certain theoretical points of view there is some advantage in having roughly 50 per cent. of the candidates attempt the final item. In three of the tests no person attempted all the items in the time allowed. In only one test, apart from the memory tests which are really in a different category, do as many as 50 per cent. attempt the final item.

No attempt appears to have been made to check the validity and the difficulty of the items included in each test. Probably if tests are to be so timed that an appreciable proportion of the population does not finish, the items should be arranged in order of increasing difficulty. With short tests it is particularly important to eliminate weak or defective items. Yet over half of the items on the "completion" test, for example, have a biserial coefficient of correlation of less than .40 with the verbal factor score to which the item contributes.[2] One sixth of the items gave biserial coefficients below .20. In the other test for the verbal factor, same or opposite, many of the distractors did not function at all with this group of subjects, and in a number of the items everyone attempting the item got it right (*e.g.*, items 2, 5, 11, 93, 95). Of the last ten items the most difficult one was answered correctly by over 80 per cent. of those attempting it or a subsequent item. Of the entire one hundred items in the test, only one, item 70, was answered correctly by fewer than 50 per cent. of those candidates attempting it or a subsequent item, and it was answered correctly by 46 per cent.

[2] A dividing line of .40 is arbitrarily selected because the College Entrance Examination Board requires items of .40 or better for its Scholastic Aptitude Test, a test of the verbal factor.

Detailed item analyses were made for eight of the sixteen tests, and they all show that the items are not arranged in order of difficulty and that ineffective items are included. Some of the tests are capable of having a decided range of difficulty (*e.g.*, same or opposite), whereas other tests probably must depend chiefly on time (*e.g.*, cards). Some tests consist essentially of one type of simple task done over and over (*e.g.*, figures) and others may become quite complex (*e.g.*, mechanical movements or arithmetic).

Question can be raised concerning the theoretical basis for the development of the present tests. Professor Spearman, for example, decries any method which leads to a revival of the untenable ancient doctrine of "faculties." He reanalyzes some of Thurstone's data and finds the "G method" of analysis suitable, although the conclusions he reaches, of course, differ from those of Thurstone. Other methods of factor analysis, when applied to the present data, suggest that seven factors are not required to account for the correlations found with the populations here considered.

Considerable light can be thrown on the general manner in which the tests in this set are mutually related by examining the sixteen-dimensional scatter diagram by which the data can be represented. More specifically, we can represent the standard scores of each individual taking the tests by a point in sixteen dimensions. Then corresponding to the scores of the 421 boys taking the tests, there will be 421 points in the space. What is the general shape of this cluster of points? The technique of principal components as developed by Hotelling provides one reasonable method of describing the shape of the cluster. The Hotelling technique was applied, and the five largest principal components were found to be 4.77, 1.89, 1.54, 1.40 and 1.18. There are sixteen components in all which are normalized so that their sum is 16. Thus about 30 per cent. of the sum of the components is due to the one largest component, and 40 per cent. is due to the next four largest components, while about 30 per cent. is due to the remaining eleven components. The most noteworthy feature of

the five largest components which were determined is the difference between the largest and the four smaller ones. The largest one stands out very prominently in the set of five. As a matter of fact, a significance test applied to the differences among these components showed that the largest is significantly different from the others[1] that the four smaller ones do not differ significantly among themselves. All of this means, with reference to the shape of the cluster of observed points, that the cluster is "stretched out" mainly in one principal direction in the space; it is more or less "cigar-shaped" (the dimensionality, however, being more than three). The important feature of the analysis is that the scatter diagram of observed points in the test space, in which observed standard deviations are adopted as the fundamental units, is "drawn out" mainly along one principal direction, which suggests that the results of the 421 boys on the sixteen tests contain information relative to only one genuinely significant "factor" (a "factor" in a different sense from that used by Thurstone; a "factor" which may or may not make "psychological sense," according to the interpreter). The optimum system of weights for linearly combining the tests to get an index for measuring this principal "factor" may be obtained.[3]

Of practical importance is the question of the value of this particular set of tests for individual diagnosis and guidance. Even if the theory on which the tests are based were beyond question, there is still the problem of how thoroughly it has been applied and how well prepared the present series is. The analysis here reported throws some light on the question. In spite of the enormous amount of research which directly or indirectly has gone into the preparation of the present set of tests and the careful editing to which they have been subjected, the results obtained with one group of candidates do not support in full the theory of the seven primary abilities. Speed, although not recognized as a "factor," appears to be of utmost importance. The time allowed for each test is brief, and the resulting individual scores, therefore, are not as dependable as if longer tests had been used. The tests could be materially improved by the elimination of items of low validity, by arranging the items in order of difficulty and by adjusting the time limits.

It will be interesting to observe the relationship found for university freshmen between the test scores of a perfected set of tests, tests given without time limits, and also to note the factors which may be postulated to account for the correlations thus obtained. Although tests given by the amount-limit method usually require more careful preparation than those given under very short time limits, such care and attention may be justified if a theory of primary mental abilities is to be established. A definite arrangement of the items according to difficulty may be desirable if time limits, even generous ones, are to be used. Longer tests may yield scores sufficiently dependable for individual diagnosis. The present experimental edition is an interesting and stimulating initial attempt. The psychologists, the personnel and guidance groups, will all undoubtedly eagerly await a revision and improvement of these tests. The present tests are more useful in suggesting new lines of experimentation, needed developments and points of weakness, than they are in yielding data useful for individual diagnosis or guidance.

JOHN M. STALNAKER
COLLEGE ENTRANCE EXAMINATION BOARD

[3] I am indebted to Professor S. S. Wilks, the consulting statistician of the College Entrance Examination Board, for this interpretation of the results of the Hotelling analysis which was made at his suggestion.

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